Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Cancelled)

2. (Currently amended) ~~The system as defined in claim 1 further including~~ A system according to claim 17 wherein the transmitter and receiver each further include pass band filters to isolate desired sub-band frequencies.

3. (Currently amended) ~~The system as defined in claim 2 having~~ A system according to claim 2, wherein the transmitter has a modulator to process each sub-band separately prior to implementation of the [[FFT]] and up-sampling means in advance of the filter to up-sample [[a]] each sub-band signal to the desired sampling rate, the receiver having corresponding down-sampling means and a corresponding demodulator.

4. (Cancelled)

5. (Cancelled)

6. (Cancelled)

7. (Cancelled)

8. (Cancelled)

9. (Cancelled)

10. (Currently amended) ~~The method as defined in claim 9~~ A method according to claim 30, further including, at each of the transmitter and the receiver, the step of ~~providing~~ using pass band filters to isolate desired sub-band frequencies.

11. (Currently amended) ~~The method as defined in claim 9~~ A method according to claim 30, wherein said FFT is implemented for only a single side band of said sub-bands.

12. (Currently amended) ~~The method of~~ A method according to claim 11, wherein a single side band filter is used.

13. (Currently amended) ~~The method as defined in~~ A method according to claim 10, including the step of ~~providing~~ using a modulator to process each sub-band separately prior to implementation of the FFT.

14. (Currently amended) ~~The method as defined in~~ A method according to claim 13, wherein, before said filtering, each sub-band signal is up-sampled ~~an up-sampling means in advance of the filter up-samples a signal~~ to the desired sampling rate.

15. (Currently amended) ~~The method as defined in claim 9 for use~~ A method according to claim 30, wherein, when the method is used in a frequency division multiplexing application, ~~wherein a variable sized FFT is used for each individual band~~ the bandwidth varies from one subband to another, with a corresponding variation of size of said plurality of different FFTs.

16. (Currently amended) [[~~The~~]] A method [[~~of~~]] according to claim 15, wherein ~~variable~~ up and down sampling rates ~~are used for each individual band~~ also vary correspondingly.

17. (New) A broad bandwidth, high data rate communications system employing Fast Fourier Transform comprising a transmitter and a receiver,

the transmitter having means for dividing the bandwidth into sub-bands each for a corresponding sub-band signal; and means for performing Inverse Fast Fourier Transform (IFFT) upon the sub-band signals using, for each sub-band signal, a respective one of a plurality of different FFTs and transmitting the transformed signals to the receiver;

the receiver having means for receiving the transformed sub-band signals and performing forward Fast Fourier Transform thereupon using, for each transformed sub-band signal, a respective one of a plurality of different FFTs corresponding to those in the transmitter.

18. (New) A system according to claim 3, wherein the transmitter and receiver are configured for transmitting and receiving, respectively, Discrete Multi-tone (DMT) signals via a Digital Subscriber Line (DSL).

19. (New) A system according to claim 4, wherein the transmitter and receiver are configured for use with a Very high rate Digital Subscriber Line (VDSL).

20. (New) A transmitter for use in a broad bandwidth, high data rate communications system employing Fast Fourier Transform, the transmitter having means for dividing the bandwidth into sub-bands each for a corresponding sub-band signal; and means for performing Inverse Fast Fourier Transform (IFFT) upon the sub-band signals using, for each sub-band signal, a respective one of a plurality of different FFTs.

21. (New) A transmitter according to claim 20, further including pass band filters to isolate desired sub-band frequencies.

22. (New) A transmitter according to claim 21, having a modulator to process each sub-band separately prior to implementation of the IFFT and up-sampling means in advance of the pass band filters to up-sample each sub-band signal to the desired sampling rate.

23. (New) A transmitter according to claim 22, configured for transmitting Discrete Multi-tone (DMT) signals via a Digital Subscriber Line (DSL).

24. (New) A transmitter as defined in claim 9, configured for use with a Very high rate Digital Subscriber Line (VDSL).

25. (New) A receiver for use in a broad bandwidth, high data rate communications system employing Fast Fourier Transform (FFT), in which transmitted signals are divided into sub-bands and converted using, for each sub-band signal, a respective one of a plurality of Inverse Fast Fourier Transforms (IFFTs), the receiver having:
means for receiving a plurality of sub-band signals in said corresponding plurality of sub-bands; and means for performing Fast Fourier Transform upon the received sub-band signals using, for each sub-band signal, a respective one of a plurality of different FFTs corresponding to the IFFTs.

26. (New) A receiver according to claim 25, wherein the receiver further includes pass band filters to isolate desired sub-band frequencies.

27. (New) A receiver according to claim 26, for use with received sub-band signals that have been modulated separately prior to implementation of the IFFT and up-sampled, the receiver having corresponding down-sampling means and a corresponding demodulator.

28. (New) A receiver according to claim 27, configured for receiving said sub-band signals in

the form of Discrete Multi-tone (DMT) signals via a Digital Subscriber Line (DSL).

29. (New) A receiver according to claim 25, configured for use with a Very high rate Digital Subscriber Line (VDSL).

30. (New) A method of implementing a Fast Fourier Transform (FFT) in a broad bandwidth, high data rate communications system comprising a transmitter and a receiver, the method comprising the steps of:
at the transmitter,

dividing the bandwidth into sub-bands each for a corresponding sub-band signal; and performing Inverse Fast Fourier Transform (IFFT) upon the sub-band signals using, for each sub-band signal, a respective one of a plurality of different FFTs and transmitting the transformed sub-band signals to the receiver; and
at the receiver,

performing forward Fast Fourier Transform upon the received transformed sub-band signals using, for each sub-band signal, a respective one of a plurality of different FFTs corresponding to those in the transmitter.

31. (New) A method of processing signals for transmission by a transmitter in a broad bandwidth, high data rate communications system employing Fast Fourier Transform, the method comprising the steps of dividing the bandwidth into sub-bands each for a corresponding sub-band signal; and performing Inverse Fast Fourier Transform (IFFT) upon the sub-band signals using, for each sub-band signal, a respective one of a plurality of different FFTs.

32. (New) A method according to claim 31, wherein pass band filters are used to isolate desired sub-band frequencies.

33. (New) A method according to claim 31, wherein a modulator is used to process each sub-band separately prior to implementation of the IFFT and each sub-band signal is up-sampled to the desired sampling rate prior to passband filtering.

34. (New) A method according to claim 31, further comprising the step of transmitting the transformed sub-bands signals as Discrete Multi-tone (DMT) signals via a Digital Subscriber Line (DSL).

35. (New) A method according to claim 34, wherein the transformed sub-band signals are transmitted via a Very high rate Digital Subscriber Line (VDSL).

36. (New) A method of processing received signals in a receiver in a broad bandwidth, high data rate communications system employing Fast Fourier Transform (FFT), in which transmitted signals are divided into sub-bands and converted using, for each sub-band signal, a respective one of a plurality of Inverse Fast Fourier Transforms (IFFTs), the receiving method comprising the steps of:
receiving a plurality of said sub-band signals in a corresponding plurality of sub-bands; and
performing Fast Fourier Transform upon the received sub-band signals using, for each sub-band signal, a respective one of a plurality of different FFTs corresponding to the IFFTs.

37. (New) A method according to claim 36, wherein the receiver a received signal is filtered using pass band filters to isolate desired sub-band frequencies.

38. (New) A method according to claim 36, for processing received sub-band signals that have been modulated separately prior to implementation of the IFFT and up-sampled, the method comprising the steps of down-sampling and demodulating the received sub-band signals using a complementary demodulator and down-sampling rate.

39. (New) A method according to claim 36, wherein said sub-band signals are received in the form of Discrete Multi-tone (DMT) signals via a Digital Subscriber Line (DSL).

40. (New) A method according to claim 39, wherein said sub-band signals are received via a Very high rate Digital Subscriber Line (VDSL).